

IN THE CLAIMS

The following is a complete listing of the claims, and replaces all earlier versions and listings.

1. (currently amended): An information processing method of controlling access to computer resource(s) managed by an operating system in a computer, the method being implemented by a specific resource management program located between the operating system and an application, the method comprising:

a storing step of storing a management table in a storage medium, wherein the management table provides, for each computer resource managed by the operating system, access right information representing access rights for outputting each computer resource to another computer resource, and conditions under which the access right is validated;

an interception step of intercepting an operation request for a first computer resource from a process, before the operation request is transferred to the operating system, and if the process holds the first computer resource, registering a correspondence between the process and the first computer resource in a storage medium resulting in a registered process and a registered computer resource;

a determination step of:

monitoring a series of operation requests associated with the registered process and the registered computer resource to recognize when the series of

operation requests, considered together, has the effect of outputting the registered computer resource to a second computer resource,

retrieving from the management table first access right information of the registered computer resource and second access right information of the second computer resource, and

determining whether the registered process has an access right for outputting the registered computer resource to the second computer resource ~~based on~~ by checking the first access right information and the second access right information retrieved from the management table;

a processing step of, if it is determined in the determination step that the registered process has the access right of both the first and the second access right information~~for outputting the registered computer resource to the second computer resource~~, transferring the operation request to the operating system and returning a result from the operating system to the registered process; and

a denial step of denying the operation request, if it is determined in the determination step that the registered process ~~does not have~~ lacks either the access right of the first access right information or the access right of the second access right information~~for outputting the registered computer resource to the second computer resource~~.

2. (cancelled)

3. (previously presented): The method according to claim 1, wherein the access right information designates an access right that is extended but not defined in an existing environment.

4. and 5. (cancelled)

6. (previously presented): The method according to claim 3, wherein the access right information contains information that designates at least one of a right to move to another medium, a right to copy to another medium, a right to print, a right to write to a shared memory, a right to capture a screen, and a right to restrict use processes.

7. (previously presented): The method according to claim 1, wherein in the denial step, an access denial error message is returned to the process without any access to the requested computer resource.

8. (previously presented): The method according to claim 1, wherein in the denial step, a successful access message is returned to the process without any access to the requested computer resource.

9. (previously presented): The method according to claim 1, wherein in the denial step, the operation request is converted into an operation request for a dummy computer resource and transferred to the operating system, and a result from the operating system is returned to the process.

10. (currently amended): An information processing apparatus for controlling access to computer resource(s) managed by an operating system in a computer, the information processing apparatus being controlled by a specific resource management program located between the operating system and an application, the apparatus comprising:

a management table stored in a storage medium, wherein the management table provides, for each computer resource managed by the operating system, access right information representing access rights for outputting each computer resource to another computer resource, and conditions under which the access right is validated;

interception means for intercepting an operation request for a first computer resource from a process before the operation request is transferred to the operating system, and if the process holds the first computer resource, for registering a correspondence between the process and the first computer resource in a storage medium resulting in a registered process and a registered computer resource;

determination means for:

monitoring a series of operation requests associated with the registered process and the registered computer resource to recognize when the series of operation requests, considered together, has the effect of outputting the registered computer resource to a second computer resource, the determination being made by:

retrieving from the management table first access right information of the registered computer resource and second access right information of the second computer resource, and

determining whether the registered process has an access right for outputting the registered computer resource to the second computer resource ~~based on~~ by checking the first access right information and the second access right information retrieved from the management table;

processing means for, if it is determined by the determination means that the registered process has the access right of both the first and the second access right information ~~for outputting the registered computer resource to the second computer resource~~, transferring the operation request to the operating system and returning a result from the operating system to the registered process; and

denial means for denying the operation request if it is determined by the determination means that the registered process ~~does not have~~ lacks either the access right of the first access right information or the access right of the second access right information ~~for outputting the registered computer resource to the second computer resource~~.

11. (cancelled)

12. (previously presented): The apparatus according to claim 10, wherein the access right information designates an access right that is extended but not defined in an existing environment.

13. and 14. (cancelled)

15. (previously presented): The apparatus according to claim 12, wherein the access right information contains information that designates at least one of a right to move to another medium, a right to copy to another medium, a right to print, a right to write to a shared memory, a right to capture a screen, and a right to restrict use processes.

16. (previously presented): The apparatus according to claim 10, wherein the denial means returns an access denial error message to the process without any access to the requested computer resource.

17. (previously presented): The apparatus according to claim 10, wherein the denial means returns a successful access message to the process without any access to the requested computer resource.

18. (previously presented): The apparatus according to claim 10, wherein the denial means converts the operation request into an operation request for a dummy computer resource, transfers the operation request to the operating system, and returns a result from the operating system to the process.

19. (currently amended): A storage medium which stores program code for controlling access to computer resource(s) managed by an operating system in a computer, wherein the program code implements a specific resource management program located between the operating system and an application, the program code comprising:

program code of a storing step of storing a management table in a storage medium, wherein the management table provides, for each computer resource managed by the operating system, access right information representing access rights for outputting each computer resource to another computer resource, and conditions under which the access right is validated;

program code of an interception step of intercepting an operation request for a first computer resource from a process, before the operation request is transferred to the operating system, and if the process holds the first computer resource, registering a

correspondence between the process and the first computer resource in a storage medium resulting in a registered process and a registered computer resource;

program code of a determination step of:

monitoring a series of operation requests associated with the registered process and the registered computer resource to recognize when the series of operation requests, considered together, has the effect of outputting the registered computer resource to a second computer resource,

retrieving from the management table first access right information of the registered computer resource and second access right information of the second computer resource, and

determining whether the registered process has an access right for outputting the registered computer resource to the second computer resource ~~based on~~ by checking the first access right information and the second access right information retrieved from the management table;

program code of a processing step of, if it is determined in the determination step that the registered process has the access right of both the first and the second access right information ~~for outputting the registered computer resource to the second computer resource~~, transferring the operation request to the operating system and returning a result from the operating system to the registered process; and

program code of a denial step of denying the operation request, if it is determined in the determination step that the registered process ~~does not have~~ lacks either

the access right of the first access right information or the access right of the second access right information~~for outputting the registered computer resource to the second computer resource.~~

20. (cancelled)

21. (previously presented): The medium according to claim 19, wherein in the determination step, it is determined whether the access right is present by looking up an access right management table containing resource designation information that designates a specific computer resource, condition information under which the access right is validated, and access right information that designates an access right that is extended but not defined in an existing environment.

22. and 23. (cancelled)

24. (previously presented): The medium according to claim 21, wherein the access right information contains information that designates at least one of a right to move to another medium, a right to copy to another medium, a right to print, a right to write to a shared memory, a right to capture a screen, and a right to restrict use processes.

25. (previously presented): The medium according to claim 19, wherein in the denial step, an access denial error message is returned to the process without any access to the requested computer resource.

26. (previously presented): The medium according to claim 19, wherein in the denial step, a successful access message is returned to the process without any access to the requested computer resource.

27. (previously presented): The medium according to claim 19, wherein in the denial step, the operation request is converted into an operation request for a dummy computer resource and transferred to the operating system, and a result from the operating system is returned to the process.

28. and 29. (cancelled)

30. (previously presented): The medium according to claim 19, wherein if it is determined in the determination step that no access right is present, and access is denied in the denial step, an access right is permitted by inputting charging information.

31. (previously presented): The medium according to claim 19, wherein the computer resource includes contents of a Web cast, digital broadcasting, and music distribution.

32. (currently amended): An information processing system constituted by connecting first and second terminals through a communication network, the first and the second terminals being controlled by a specific resource management program located between an operating system and an application for each terminal, wherein

the first terminal comprises:

interception means for intercepting an operation request for a first computer resource of the second terminal from a process in the first terminal, before the computer resource of the second terminal is accessed via an operating system of the first terminal, and if the process holds the first computer resource, registering a correspondence between the process and the first computer resource in a storage medium resulting in a registered process and a registered computer resource, and

transmitting means for transmitting the operation request intercepted by the interception means to the second terminal; and

the second terminal comprises:

storing means for storing a management table in a storage medium, wherein the management table provides, for each computer resource managed by the operating system of the second terminal, access right information representing access rights for

outputting each computer resource to another computer resource, and conditions under which the access right is validated;

receiving means for receiving the operation request intercepted by the interception means of the first terminal;

determination means for:

monitoring a series of operation requests associated with the registered process and the registered computer resource to recognize when the series of operation requests, considered together, has the effect of outputting the registered computer resource to a second computer resource,

retrieving from the management table first access right information of the registered computer resource and second access right information of the second computer resource, and

determining whether the registered process has an access right for outputting the registered computer resource to the second computer resource ~~based on~~ by checking the first access right information and the second access right information retrieved from the management table;

processing means for, if it is determined by the determination means that the registered process has the access right of both the first and the second access right information ~~for outputting the registered computer resource to the second computer resource~~, transferring the operation request to the operating system in the first terminal and

returning a result from the operating system to the registered process in the first terminal;
and

denial means for denying the operation request if it is determined by the determination means that the registered process ~~does not have~~ lacks either the access right of the first access right information or the access right of the second access right information~~for outputting the registered computer resource to the second computer resource.~~

33. (currently amended): A control method for an information processing system constituted by connecting first and second terminals through a communication network, the first and the second terminals being controlled by a specific resource management program located between an operating system and an application for each terminal, the method comprising:

a storing step of storing a management table in a storage medium, wherein the management table provides, for each computer resource managed by an operating system of the second terminal, access right information representing access rights for outputting each computer resource to another computer resource, and conditions under which the access right is validated;

an interception step of intercepting an operation request for a first computer resource of the second terminal from a process in the first terminal, before the computer resource of the second terminal is accessed via an operating system of the first terminal,

and if the process holds the first computer resource, registering a correspondence between the process and the first computer resource in a storage medium resulting in a registered process and a registered computer resource;

a determination step of:

monitoring a series of operation requests associated with the registered process and the registered computer resource to recognize when the series of operation requests, considered together, has the effect of outputting the registered computer resource to a second computer resource,

retrieving from the management table first access right information of the registered computer resource and second access right information of the second computer resource, and

determining whether the registered process has an access right for outputting the registered computer resource to the second computer resource ~~based on by~~ checking the first access right information and the second access right information retrieved from the management table;

a processing step of, if it is determined in the determination step that the registered process has the access right of both the first and the second access right information~~for outputting the registered computer resource to the second computer resource~~, transferring the operation request to the operating system in the first terminal and returning a result from the operating system to the registered process in the first terminal; and

a denial step of denying the operation request if it is determined in the determination step that the registered process ~~does not have~~ lacks either the access right of the first access right information or the access right of the second access right information~~for outputting the registered computer resource to the second computer resource.~~

34. (currently amended): A storage medium which stores program codes of control for an information processing system constituted by connecting first and second terminals through a communication network, the first and the second terminals being controlled by a specific resource management program located between an operating system and an application for each terminal, comprising:

program code of a storing step of storing a management table in a storage medium, wherein the management table provides, for each computer resource managed by an operating system of the second terminal, access right information representing access rights for outputting each computer resource to another computer resource, and conditions under which the access right is validated;

program code of an interception step of intercepting an operation request for a first computer resource of the second terminal from a process in the first terminal, before the computer resource of the second terminal is accessed via an operating system of the first terminal, and if the process holds the first computer resource, registering a

correspondence between the process and the first computer resource in a storage medium resulting in a registered process and a registered computer resource;

program code of a determination step of:

monitoring a series of operation requests associated with the registered process and the registered computer resource to recognize when the series of operation requests, considered together, has the effect of outputting the registered computer resource to a second computer resource,

retrieving from the management table first access right information of the registered computer resource and second access right information of the second computer resource, and

determining whether the registered process has an access right for outputting the registered computer resource to the second computer resource ~~based on~~ by checking the first access right information and the second access right information retrieved from the management table;

program code of a processing step of, if it is determined in the determination step that the registered process has the access right of both the first and the second access right information ~~for outputting the registered computer resource to the second computer resource~~, transferring the operation request to the operating system in the first terminal and returning a result from the operating system to the registered process in the first terminal; and

program code of a denial step of denying the operation request if it is determined in the determination step that the registered process ~~does not have~~ lacks either the access right of the first access right information or the access right of the second access right information ~~for outputting the registered computer resource to the second computer resource.~~

35. (cancelled)

36. (currently amended): An information processing apparatus connected to a terminal through a communication network, the information processing apparatus and the terminal being controlled by a specific resource management program located between an operating system and an application for each of the information processing apparatus and the terminal, the apparatus comprising:

interception means for intercepting an operation request for a first computer resource of the terminal from a process, before the computer resource of the terminal is accessed via an operating system of the information processing apparatus, and if the process holds the first computer resource, for registering a correspondence between the process and the first computer resource in a storage medium resulting in a registered process and a registered computer resource;

transmitting means for transmitting the operation request intercepted by the interception means to the terminal; and

receiving means for receiving a reply to the operation request from the terminal,

wherein the terminal:

monitors a series of operation requests associated with the registered process and the registered computer resource to recognize when the series of operation requests, considered together, has the effect of outputting the registered computer resource of the terminal to a second computer resource,

retrieves from a management table first access right information of the registered computer resource and second access right information of the second computer resource, and

determines whether the registered process has an access right for outputting the registered computer resource to the second computer resource ~~based on~~ by checking the first access right information and the second access right information retrieved from the management table, wherein the management table provides, for each computer resource managed by the operating system of the terminal, access right information representing access rights for outputting each computer resource to another computer resource, and conditions under which the access right is validated,

wherein the receiving means receives a determination result determined by the terminal as the reply.

37. (currently amended): An information processing apparatus connected to a terminal through a communication network, the information processing apparatus and the terminal being controlled by a specific resource management program located between an operating system and an application for each of the information processing apparatus and the terminal, the apparatus comprising:

storing means for storing a management table in a storage medium, wherein the management table provides, for each computer resource managed by an operating system of the information processing apparatus, access right information representing access rights for outputting each computer resource to another computer resource, and conditions under which the access right is validated;

receiving means for receiving an operation request for a first computer resource of the information processing apparatus from a process of the terminal, intercepted by the terminal, before the first computer resource of the information processing apparatus is accessed via an operating system of the information processing apparatus, and if the process holds the first computer resource, registering a correspondence between the process and the first computer resource in a storage medium resulting in a registered process and a registered computer resource;

determination means for:

monitoring a series of operation requests associated with the registered process and the registered computer resource to recognize when the series of

operation requests, considered together, has the effect of outputting the registered computer resource to a second computer resource,

retrieving from the management table first access right information of the registered computer resource and second access right information of the second computer resource, and

determining whether the registered process has an access right for outputting the registered computer resource to the second computer resource ~~based on~~ by checking the first access right information and the second access right information retrieved from the management table;

processing means for, if it is determined by the determination means that the registered process has the access right of both the first and the second access right information~~for outputting the registered computer resource to the second computer resource~~, transferring the operation request to the operating system in the terminal and returning a result to a process in the terminal; and

denial means for denying the operation request if it is determined by the determination means that the registered process ~~does not have~~ lacks either the access right of the first access right information or the access right of the second access right information~~for outputting the registered computer resource to the second computer resource~~.

38. (currently amended): An information processing method for an information processing apparatus connected to a terminal through a communication network, the information processing apparatus and the terminal being controlled by a specific resource management program located between an operating system and an application for each of the information processing apparatus and the terminal, the method comprising:

an interception step of intercepting an operation request for a first computer resource of the terminal from a process, before the computer resource of the terminal is accessed via an operating system of the information processing apparatus, and if the process holds the first computer resource, registering a correspondence between the process and the first computer resource in a storage medium resulting in a registered process and a registered computer resource, and

a transmitting step of transmitting the operation request intercepted in the interception step to the terminal;

a receiving step of receiving a reply to the operation request from the terminal,

wherein the terminal:

monitors a series of operation requests associated with the registered process and the registered computer resource to recognize when the series of operation requests, considered together, has the effect of outputting the registered computer resource of the terminal to a second computer resource,

retrieves from a management table first access right information of the registered computer resource and second access right information of the second computer resource, and

determines whether the registered process has an access right for outputting the registered computer resource to the second computer resource ~~based on~~ by checking the first access right information and the second access right information retrieved from the management table, wherein the management table provides, for each computer resource managed by the operating system of the terminal, access right information representing access rights for outputting each computer resource to another computer resource, and conditions under which the access right is validated,

wherein in the receiving step, a determination result determined by the terminal is received as the reply.

39. (currently amended): An information processing method for an information processing apparatus connected to a terminal through a communication network, the information processing apparatus and the terminal being controlled by a specific resource management program located between an operating system and an application for each of the information processing apparatus and the terminal, the method comprising:

a storing step of storing a management table in a storage medium, wherein the management table provides, for each computer resource managed by an operating

system of the information processing apparatus, access right information representing access rights for outputting each computer resource to another computer resource, and conditions under which the access right is validated;

a receiving step of receiving an operation request for a first computer resource of the information processing apparatus from a process of the terminal, intercepted by the terminal, before the computer resource of the information processing apparatus is accessed via an operating system of the information processing apparatus, and if the process holds the first computer resource, registering a correspondence between the process and the first computer resource in a storage medium resulting in a registered process and a registered computer resource;

a determination step of:

monitoring a series of operation requests associated with the registered process and the registered computer resource to recognize when the series of operation requests, considered together, has the effect of outputting the registered computer resource to a second computer resource,

retrieving from the management table first access right information of the registered computer resource and second access right information of the second computer resource, and

determining whether the registered process has an access right for outputting the registered computer resource to the second computer resource ~~based on~~ by

checking the first access right information and the second access right information

retrieved from the management table;

a processing step of, if it is determined in the determination step that the registered process has the access right of both the first and the second access right information~~for outputting the registered computer resource to the second computer resource~~, transferring the operation request to the operating system in the terminal and returning a result to a process in the terminal; and

a denial step of denying the operation request if it is determined in the determination step that the registered process ~~does not have~~ lacks either the access right of the first access right information or the access right of the second access right information~~for outputting the registered computer resource to the second computer resource~~.

40. (currently amended): A storage medium which stores program codes of information processing of an information processing apparatus connected to a terminal through a communication network, wherein the information processing apparatus and the terminal are controlled by a specific resource management program located between an operating system and an application for each the information processing apparatus and the terminal, the program codes comprising:

program code of an interception step of intercepting an operation request for a first computer resource of the terminal from a process, before the computer resource of

the terminal is accessed via an operating system of the information processing apparatus,
and if the process holds the first computer resource, registering a correspondence between
the process and the first computer resource in a storage medium resulting in a registered
process and a registered computer resource;

program code of a transmitting step of transmitting the operation request
intercepted in the interception step to the terminal;

program code of a receiving step of receiving a reply to the operation
request from the terminal,

wherein the terminal:

monitors a series of operation requests associated with the registered
process and the registered computer resource to recognize when the series of operation
requests, considered together, has the effect of outputting the registered computer resource
of the terminal to a second computer resource,

retrieves from a management table first access right information of
the registered computer resource and second access right information of the second
computer resource, and

determines whether the registered process has an access right for
outputting the registered computer resource to the second computer resource ~~based on~~ by
checking the first access right information and the second access right information
retrieved from the management table, wherein the management table provides, for each
computer resource managed by the operating system of the terminal, access right

information representing access rights for outputting each computer resource to another computer resource, and conditions under which the access right is validated,

wherein in the receiving step, a determination result determined by the terminal is received as the reply.

41. (currently amended): A storage medium which stores program codes of information processing of an information processing apparatus connected to a terminal through a communication network, the information processing apparatus and the terminal being controlled by a specific resource management program located between an operating system and an application for each of the information processing apparatus and the terminal, the program codes comprising:

program code of a storing step of storing a management table in a storage medium, wherein the management table provides, for each computer resource managed by an operating system of the information processing apparatus, access right information representing access rights for outputting each computer resource to another computer resource, and conditions under which the access right is validated;

program code of a receiving step of receiving an operation request for a first computer resource of the information processing apparatus from a process of the terminal, intercepted by the terminal, before the computer resource of the information processing apparatus is accessed via an operating system of the information processing apparatus, and if the process holds the first computer resource, registering a correspondence between the

process and the first computer resource in a storage medium resulting in a registered process and a registered computer resource;

program code of a determination step of:

monitoring a series of operation requests associated with the registered process and the registered computer resource to recognize when the series of operation requests, considered together, has the effect of outputting the registered computer resource to a second computer resource,

retrieving from the management table first access right information of the registered computer resource and second access right information of the second computer resource, and

determining whether the registered process has an access right for outputting the registered computer resource to the second computer resource ~~based on~~ by checking the first access right information and the second access right information retrieved from the management table;

program code of a processing step of, if it is determined in the determination step that the registered process has the access right of both the first and the second access right information ~~for outputting the registered computer resource to the second computer resource~~, transferring the operation request to the operating system in the terminal and returning a result to a process in the terminal; and

program code of a denial step of denying the operation request if it is determined in the determination step that the registered process ~~does not have~~ lacks either

the access right of the first access right information or the access right of the second access right information~~for outputting the registered computer resource to the second computer resource.~~

42.-56. (cancelled)

57. (previously presented): The method according to claim 1, wherein the interception step further comprises intercepting an operation request from the operating system before access to a computer resource.

58. (previously presented): The apparatus according to claim 10, wherein the interception means further comprises intercepting an operation request from the operating system before access to a computer resource.

59. (previously presented): The medium according to claim 19, wherein the interception step further comprises intercepting an operation request from the operating system before access to a computer resource.

60. (cancelled)